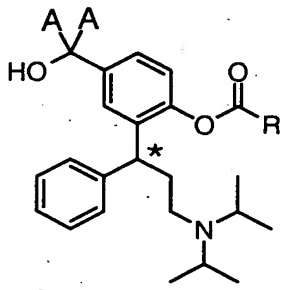
Claims

1. The compound of the general Formula I,



Formula I

in which A means hydrogen or deuterium, R stands for a group that is selected from C_{1-6}-alkyl, C_{3-10}-cycloalkyl or phenyl, which may each be substituted with C_{1-3}-alkoxy, fluorine, chlorine, bromine, iodine, nitro, amino, hydroxyl, oxo, mercapto or deuterium and where the C-atom marked with a star "*" may be present in the (R)-configuration, the (S)-configuration or as a mixture of it,

characterized by the fact that the said compound is present as a free base in a degree of purity of above 97 percent by weight.

2. A compound according to claim 1, whereby R is selected from the group methyl, ethyl, isopropyl 1 1-propyl, 1-butyl, 2-butyl, tertiary-butyl, iso-butyl, pentyl and hexyl.

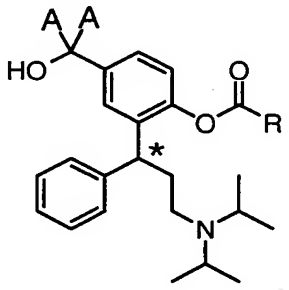
3. A compound according to one of the previous claims, whereby the compound is 2-[3-(1,1-diisopropylamino)-1-phenylpropyl]-4-(hydroxymethyl)phenyl isobutyrate.

4. A compound according to one of the previous claims characterized by the fact that the C-atom marked with "*" is present in the (R)-configuration.

5. A compound according to one of the previous claims, whereby the compound is (R)-2-[3-(1,1-diisopropylamino)-1-phenylpropyl]-4-(hydroxymethyl)phenyl isobutyrate (fesoterodine).

6. A compound according to one of the previous claims for use as a medicine.

7. Manufacture of a compound of the general Formula I



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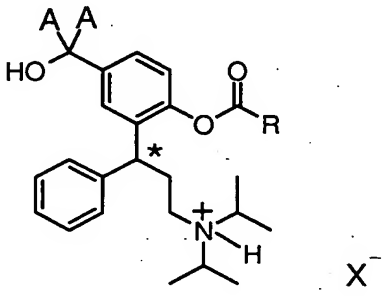
through release of the base from a crystalline salt of the general Formula II



Formula II

with a degree of purity of at least 97 percent by weight where A and R have the significance given above, X^- is the acid residue of a physiological compatible acid and where the C-atom marked with "*" (a star) can be present in the (R)-configuration, in the (S)-configuration or as a mixture thereof.

8. A manufacturing procedure in accordance with claim 7, characterized by the fact that the conversion of the compound of the Formula II is made with a suitable releasing reagent in an aqueous solution.

9. A manufacturing procedure in accordance with claim 8, whereby the releasing reagent has a pK_B of 8-11 and does not lead to the precipitation of compounds of the Formula I.

10. A manufacturing procedure in accordance with one of the previous claims characterized by the fact that the free base of the general Formula I is released from the crystalline salt of the general Formula II by a reagent being added which is chosen from the group

(a) of the alkaline, alkaline earth- or ammonium hydrogen carbonates
(b) of the amines, polyamines and alkaline polyamino acids and
(c) of the alkaline ionic exchangers

11. A manufacturing procedure according to one of the previous claims characterized by the fact that the compound of the Formula 1 is released from a crystalline salt of the Formula II through the addition of an alkaline, an earth-alkaline or an ammonium hydrogen carbonate.

12. A manufacturing procedure according to one of the previous claims characterized by the fact that after the release of the high purity base of the Formula I from the salt of the Formula II, a solution is added that is chosen from the group of dichloromethane, ethyl methyl ketone, ethyl acetate, tertiary butyl methyl ether, diether as well as toluene.

13. A manufacturing process according to one of the previous claims characterized by the fact that the R is selected from the group methyl, ethyl, isopropyl, 1-propyl, 1-butyl, 2-

butyl, tertiary-butyl, iso-butyl, pentyl and hexyl and whereby the C-atom marked with an "*" (star) is present in the (R)-configuration.

14. A manufacturing process according to one of the previous claims, whereby the compound is of the Formula I (R)-2-[3-(1,1-diisopropylamino)-1-phenylpropyl]-4-(hydroxymethyl)phenyl isobutyrate.

15. A manufacturing process according to one of the previous claims, whereby the compound is of the Formula II (R)-2-[3-(1,1-diisopropylamino)-1-phenylpropyl]-4-(hydroxymethyl)phenyl isobutyrate hydrogen fumarate.

16. Manufacture of a pharmaceutical formulation comprising a compound according to one of the claims 1-5 characterized by the fact that the said compound is manufactured following a procedure in compliance with one of the claims 7-15 and then is mixed with a pharmaceutically acceptable carrier.

17. A pharmaceutical formulation comprising a compound according to one of the claims 1-5 and a pharmaceutically acceptable carrier.

18. A pharmaceutical formulation according to claim 17, whereby the pharmaceutically acceptable carrier is a polymer.

19. A pharmaceutical formulation according to one of the previous claims characterized by the stabilization of the compound of the Formula I in the pharmaceutical formulation, whereby the stabilization factor, determined by the division of the average monthly drop in concentration of the compound of Formula I during storage of the pharmaceutical formulation at 5°C by the average monthly drop in concentration of the corresponding compound of Formula 1 during storage as oil and in the absence of the pharmaceutically acceptable carrier, is at least 2.

20. A pharmaceutical formulation according to the claims 17-19, whereby the formulation exhibits a pH value of 3.0-6.0.

21. A pharmaceutical formulation according to one of the previous claims, whereby the pharmaceutical formulation is suitable for transdermal or transmucosal delivery.

22. A pharmaceutical formulation according to one of the previous claims, whereby the pharmaceutical formulation contains a polymer layer in which a compound according to one of the claims 1-5 is either dissolved or dispersed.

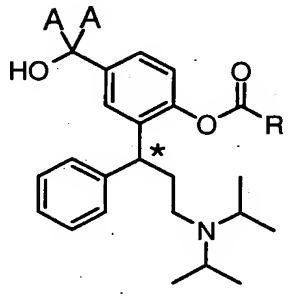
23. A pharmaceutical formulation according to claim 22, whereby the polymer layer contains a contact adhesive that makes the attachment of the pharmaceutical composition to the skin or the mucous membrane of the patient possible.

24. A pharmaceutical formulation according to claim 22, whereby the polymer layer contains a contact adhesive that makes the attachment of the pharmaceutical composition to the skin of the patient possible and that is chosen from the group of silicone, acrylate, SXS-, PIB- or EVA based contact adhesives.

25. A pharmaceutical formulation according to one of the previous claims, whereby the pharmaceutical formulation is a transdermal therapeutic system of the active drug-in-adhesive type.

26. A kit containing a pharmaceutical formulation according to one of the previous claims and a drying agent.

27. A dosing unit, which contains at least 3 mg of a compound of the general Formula I,



Formula II

as well as at least one pharmaceutically acceptable carrier, whereby A is either hydrogen or deuterium, R stands for a group that is selected from C_{1-6}-alkyl, C_{3-6}-cycloalkyl or phenyl, which may each be substituted with C_{1-3}-alkoxy, fluorine, chlorine, bromine,

iodine, nitro, amino, hydroxyl, oxo, mercapto or deuterium and where the C-atom marked with a star "*" may be present in the (R)-configuration, the (S)-configuration or as a mixture of it and whereby the free base of the compound I is present in a purity of above 97 percent by weight.

28. A dosing unit according to claim 27, whereby the compound is (R) 2-[3-(1,1-Diisopropylamino)-1-phenylpropyl]-4-(hydroxymethyl)phenyl isobutyrate (fesoterodine).

29. Use of a compound according to one of the claims 1-5 for the manufacture of a medicine.

30. Use according claim 29 whereby the medicine is suitable for the treatment of incontinence, hyperactivity of the detrusor, hyperactivity of the bladder, pollakisuria, nocturia or imperative urinary urgency.

31. Use according to one of the previous claims, whereby the medicine is suitable for transdermal or transmucosal administration.

32. Use according to one of the previous claims, whereby the medicine is a patch.

33. Use according to one of the previous claims, whereby the medicine

(b) comprises a self-adhesive polymer layer into which the high purity base of fesoterodine was introduced and

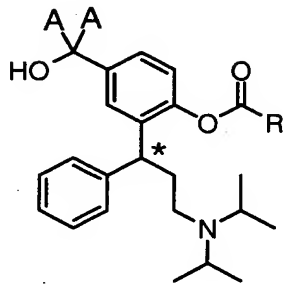
(b) delivers fesoterodine at a flux rate of 3-15 mg/day through human skin.

34. fesoterodine hydrogen carbonate.

35. A method for the treatment of incontinence, hyperactivity of the detrusor, hyperactivity of the bladder, pollakisuria, nocturia or imperative urinary urgency through the administration of a compound according to one of the claims 1-5 or a formulation according to one of the claims 17-25 to a mammal.

Summary

This invention concerns a compound of the general Formula I,



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characterized by the fact that the said compound is present as a free base in a degree of purity of above 97 percent by weight.

Furthermore, the invention concerns a procedure for the manufacture of high purity compounds of the general Formula I as well as the use of the high purity compounds for the manufacture of drugs.